Yaxuan (Sean) Zhang

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INTRODUCTION

I am a self-motivated person with a passion for data. With over 6 years of quantitative experience, I am dedicated to leveraging cutting-edge data analytics to deliver innovative solutions and data-driven decision-making across industries.
Strengths: Traffic Analysis & Planning, GIS, Cartography, Statistical Modeling, Machine Learning, Forecasting, Data Quality

SKILLS

Technical Skill: R (6 yrs), Python (2 yrs), SQL (1-2 yrs), Git, HTML, ArcGIS, PostGIS, Stata, SPSS, Microsoft Office
Python Libraries: Pandas, Numpy, sklearn, SciPy, PyTorch, TensorFlow, PyMC3, matplotlib, plotly, ArcPy, Geopandas

PROFESSIONAL EXPERIENCES

Mobility Data Researcher, University of Minnesota, Minneapolis, MN — Jun 2022 – present
- Led a data collection process, designing surveys and collecting GPS travel data from 1000+ participants.
- Applied data mining and statistical models to study gender discrepancies in mobility patterns to promote social equity.
- Designed an interpretable Machine Learning algorithm to model health disparities related to mobility behaviors.
- Delivered a recommendation report to external stakeholders (MnDOT) to inform policy-making decisions.

Transportation Planning Data Science Intern, Metropolitan Council, Saint. Paul, MN — June 2023 – Aug 2023
- Designed an SQL pipeline to fetch, clean, and process real-time traffic data into a web dynamic map dashboard.
- Implemented a Generalized Additive Model (GAM) for traffic volume forecasting.
- Conducted QAQC, exploratory analysis, and visualization for transit data and delivered insights to internal stakeholders.

Mobility Data Analyst, University of Minnesota, Minneapolis, MN — Jun 2020 – May 2022
- Proposed a data-driven framework to address spatial-temporal quality issues in GPS mobility data.
- Adopted ML and trajectory analysis to identify human travel behaviors and measure person-based accessibility space.
- Created an R pipeline for GPS travel surveys, including data cleaning, mobility pattern analysis, and visualization.

COURSE PROJECTS

Urban Mobility and Traffic Analytics — Sep 2023 – Dec 2023
- Designed Bayesian models with spatial-temporal dependency terms to predict NYC Uber pickup frequencies.
- Developed deep neural networks with gravity functions to predict human mobility flows between locations in cities.

ResNet Convolutional Neural Networks (CNN) — Jan 2023 – May 2023
- Performed feature extraction, AutoML, and CNN (TensorFlow) on electrocardiogram for heart disease classification.
- Designed a multi-level Residual Network using PyTorch, improving 9.5% accuracy versus baseline CNN.

Invasive Species Geo-Simulation System — Jan 2023 – May 2023
- Designed and implemented a real-time pipeline with three spatial interaction models, achieving 95.9% accuracy.
- Published web maps utilizing a comprehensive toolkit including ArcPy, PostGIS, Flask, and Google Cloud.

Location Intelligence Business Analytics — Mar 2017 - Sep 2017
- Applied geospatial statistical models (e.g., GWR) to analyze spatial patterns of e-business in China.
- Utilized multi-source data (e.g., POI, parcel) to conduct location-based analysis for business hotspot selection.

SELECTED PUBLICATIONS AND CONFERENCE PRESENTATIONS

Selections from 8 publications and 12 presentations

Zhang, Y., Li, C., Song, Y., Chai, Y., & Fan, Y. (2022). Personalizing the dichotomy of fixed and flexible activities in everyday life: deriving prism anchors from GPS-enabled survey data. *Transportation,* 1-26.
Zhang, Y., Song, Y., & Fan, Y. (2022). Improving data quality of smartphone-based activity-travel survey: A framework for data post-processing. *Transactions in GIS*, 26(1), 475-504

AWARDS

• TRB Emerging Scholar • AAG Transportation Geography Travel Award • AAG Spatial Analysis & Modeling Travel Award • UCGIS Student Scholarship Award • UMN Diversity Fellowship • (China) Microsoft Scholarship

EDUCATION

Ph.D., Geographic Information Science (GIS), University of Minnesota - Twin Cities (UMN), MN — May 2024
M.S., GIS, Computer Science (minor), University of Minnesota, MN (GPA: 3.84/4.0) — May 2024
B.Eng., GIS, Wuhan University, Wuhan, China (GPA: 3.78/4.0) — Jun 2018